Bootsole Project

Biological Assessment and Biological Evaluation
for
Threatened, Endangered, and Sensitive Vascular Plants, Bryophytes, Lichens, and Fungi

Botany Report
for Watch List (Special Interest) Plant Species and other Botanical Resources

Noxious Weed Risk Assessment
and Management Strategy

Botany Protection Plan

Plumas National Forest
Beckwourth Ranger District

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INTRODUCTION

PURPOSE

Biological Assessment and Biological Evaluation. Forest Service Manual 2672.42 specifies that a biological assessment and a biological evaluation (BA/BE) be prepared to determine if a project may affect any U.S. Fish and Wildlife Service (USFWS) Threatened, Endangered, or Proposed species (the Biological Assessment) or Forest Service Sensitive species (the Biological Evaluation). The purpose of the Biological Assessment (BA) and Biological Evaluation (BE) portions of this document is to describe the effects of the proposed project on all Threatened, Endangered, Proposed, and Sensitive (TEPS) plant species of record for the project area. The objectives of the BA/BE are:

1. To ensure that Forest Service actions do not contribute to loss of viability of any native or desired non-native plant.
2. To ensure that Forest Service actions do not hasten the federal listing of any species.
3. To provide a process and standard through which TEPS species receive full consideration throughout the planning process, reducing negative impacts to species and enhancing opportunities for mitigation.

Because the Bootsole Project is receiving California State funds for implementation, it must also be analyzed according to the requirements of the California Environmental Quality Act (CEQA). Therefore, this document also serves a fourth purpose:

4. To analyze any potential effects of the project on plant species with a California Native Plant Ranking of 1 through 4, and to design mitigation measures which would reduce those effects to less-than-significant levels.

Botany Report. The purpose of the Botany Report is to document consideration of PNF Watch List plant species (formerly called Special Interest plant species) that may be impacted by project activities. This report also recommends protection measures where necessary to prevent Watch List species from being eliminated from Plumas National Forest lands and/or elevated to the Sensitive species list. A note about revegetation of disturbed areas with native species is included at the end of this section.

Noxious Weed Risk Assessment. A Noxious Weed Risk Assessment is prepared to evaluate the risk of noxious weed introduction and spread as a result of project activities. The risk assessment focuses on California Department of Food and Agriculture (CDFA) listed noxious weeds (also called Non-native Invasive Plant species – NNIP). The evaluation is a nine-step process to assess factors not dependent on the proposed action: 1) Inventory, 2) Known noxious weeds and control measures, 3) Current habitat vulnerability, 4) Non-project dependent vectors, factors that would result from the proposed action, 5) Habitat alteration expected as a result of project, 6) Increased vectors as a result of project implementation and recommended design criteria and standard operating procedures, 7) Noxious weed control and prevention measures, 8) Anticipated weed response to proposed action, and 9) Costs.

PROJECT NAME AND TYPE

Name: Bootsole Project

Type: Fuel Reduction and Forest Health Improvement

Project Location

The project area is located on top of the escarpment above the community of Janesville, CA; approximately 1.5 miles south of Thompson Peak, 3 miles south of Janesville, and 4 miles west of route 395. It includes all or portions of: Township (T) 28 North (N), Range (R) 13 East (E), Sections 31 through 33; T27N, R12E, Sections 1 and 12; and T27N, R13E, Sections 4 through 10 and 16 through 18 of the Mount Diablo Meridian (*See* Figure 1).

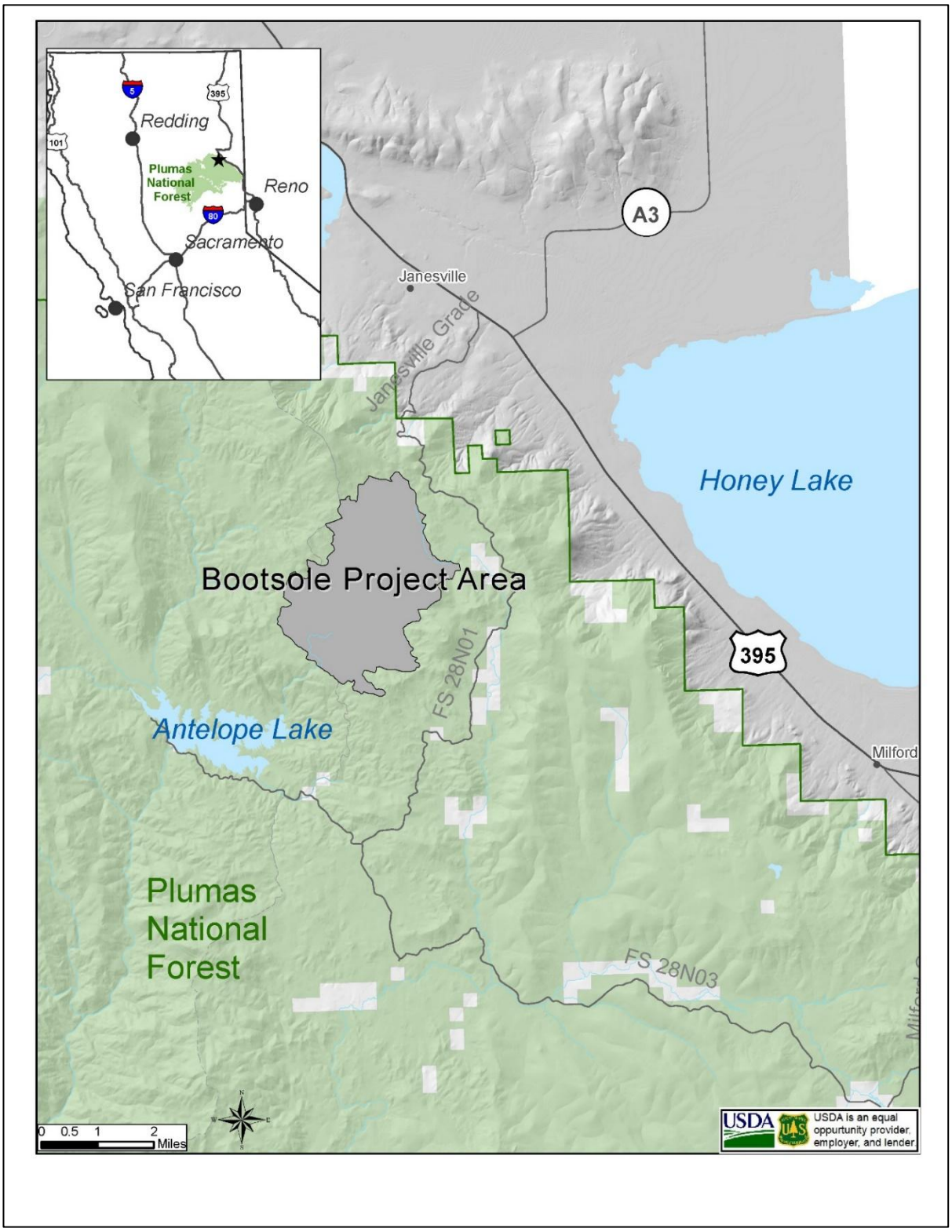

Figure 1: Project Vicinity Map

The project area is within all or portions of Antelope Creek, Clarks Creek, McDermott Creek, and Boulder Creek Hydrologic Unit Code 6 watersheds. The project area encompasses 4,389 acres of National Forest System lands located within the Last Chance Management Area (MA 40), as identified in the 1988 Plumas National Forest Land and Resource Management Plan. The elevation of the project area ranges from 5,800-6,800 feet with average annual precipitation ranging from 20 to 30 inches. Topography consists of flat to gently sloping terrain. Approximately 600 acres of the project area lies within a wildland urban interface zone (WUI), which is an area where human habitation is mixed with areas of flammable wildland vegetation.

Project Summary

The project proposes treatments in conifer stands that would selectively remove conifers, using variable density silviculture prescriptions to promote a mixture of tree sizes and structural diversity throughout the project area. Residual stands would be more open, increasing the amount of available soil moisture and sunlight for individual trees. Prescriptions would generally retain old-growth and large trees while promoting shade-intolerant, fire-resistant conifers. Select conifers would be removed using a combination of ground-based mechanical thinning, hand thinning, hand piling, grapple piling, mastication and prescribed burning. Following conifer removal, prescribed burning could be used to reduce surface fuels throughout the project area.

Aspen and meadow treatments would remove encroaching conifers from the interior of meadows and aspen stands and thin conifers in the surrounding forest areas to minimize seed sources and prevent future conifer encroachment.

The project also proposes to improve system roads and obliterate unauthorized non-system roads that are negatively impacting watershed condition. Obliteration of roads that are not part of the National Forest Transportation System (non-system roads) would be completed using a combination of tracked mechanical equipment and manual labor with hand tools.

Project activities may occur beginning in Spring 2021. Proposed treatments are described below by treatment and vegetation type. Mechanical variable density thinning, mechanical fuels, hand thin, and prescribed burn only units are shown in Figure 2. The acreage of each treatment type is summarized in Table 1.

Table 1: Bootsole Project Acreage by Treatment Type

Silviculture Treatment	Acres	Explanation
Mechanical Thin	≤ 3,080[1]	General Forest Stands: Removal of conifers <30" DBH by variable density thinning. Follow up underburn and/or mechanical fuels treatment would take place in some units. Aspen and Meadows: Removal of conifers located in the interior of aspen stands/clones, meadows, and meadow buffers and within a 150' extended treatment zone (ETZ). Follow up underburn would take place in some units.
Mechanical Fuels Treatment	359	Hand thin or mechanically thin trees <11.0" DBH with machine piling or mastication of brush and activity created slash and specified existing down material. Follow up underburn or pile burn would take place in these units.

Hand Thin	331	Hand thin trees <6.0" DBH with hand piling or lop and scatter of activity created slash and specified existing down material.[1] Follow up pile burning or underburning would take place.
Prescribed Burn Only	463	Utilize low to moderate intensity prescribed fire to reduce surface accumulation of vegetative material. Areas may receive hand thinning pretreatments to meet burn plan goals. Existing roads and natural barriers would be utilized as fire lines to minimize new ground disturbance although additional improvements or fire line construction around the burn area perimeter may be necessary.
Total Treatment Acres	4,233	

GEOGRAPHIC EXTENT OF AREA ANALYZED AND TIMEFRAME FOR ANALYSIS

The geographic area of analysis for rare plants, , and other botanical resources is restricted to the project area of proposed treatments (*See* Figure 2).Non-native invasive plants (NNIP – also called noxious weeds) are analyzed an additional 1-mile buffer outside the project area. This analysis area was selected because it bounds the spatial extent of project related activities and potential direct, indirect, and resulting cumulative effects to the species analyzed below. The distribution of each rare plant species extends beyond the project area and the distribution of each species is different. Most extend beyond the boundaries of the Beckwourth Ranger District and some extend beyond the Plumas National Forest. The timeframe for analysis for this project area is 30-40 years.

DESCRIPTION OF PROJECT

Purpose and Need

The Bootsole project area is primarily comprised of upland eastside pine stands with meadows and aspen stringers, or narrow, connected aspen groves that follow the riparian corridor. Aspen is located both in upland and lowland meadows and riparian areas. There are infrequent Sierran mixed conifer stands at the highest elevations and northwestern portion of the project area. Dominant conifer vegetation within the project area includes Jeffrey and ponderosa pine with mixtures of white fir, sugar pine and incense cedar at higher elevations, and lodgepole pine in lower, moist areas.

Eastside pine stands and Sierran mixed conifer stands within the project area are currently overstocked due to fire suppression and past management activities. White fir is encroaching into these stands and is not well adapted to the dry conditions; leaving stands susceptible to insect and disease infestation and high severity stand replacing wildfire. Many stands have experienced elevated levels of tree mortality associated with insects, pathogens and drought and contain high numbers of standing and down dead trees. Jeffrey pine and lodgepole pine is encroaching on the aspen stringers and meadows and has created carpets of advanced regeneration throughout some pine stands.

Encroachment of shade-tolerant conifers on aspen stands is resulting in decreased size and health of these unique habitats. Aspen trees are experiencing increased competition for light, water, and nutrients which is impacting stand vigor and new growth. Aspen communities are particularly important for supporting diverse wildlife and plant communities and stands with dense conifers are at high risk of losing their

[1] Where mechanical treatments are not possible due to site sensitivity or prohibitive access, units may be hand thinned and trees >6" DBH removed.

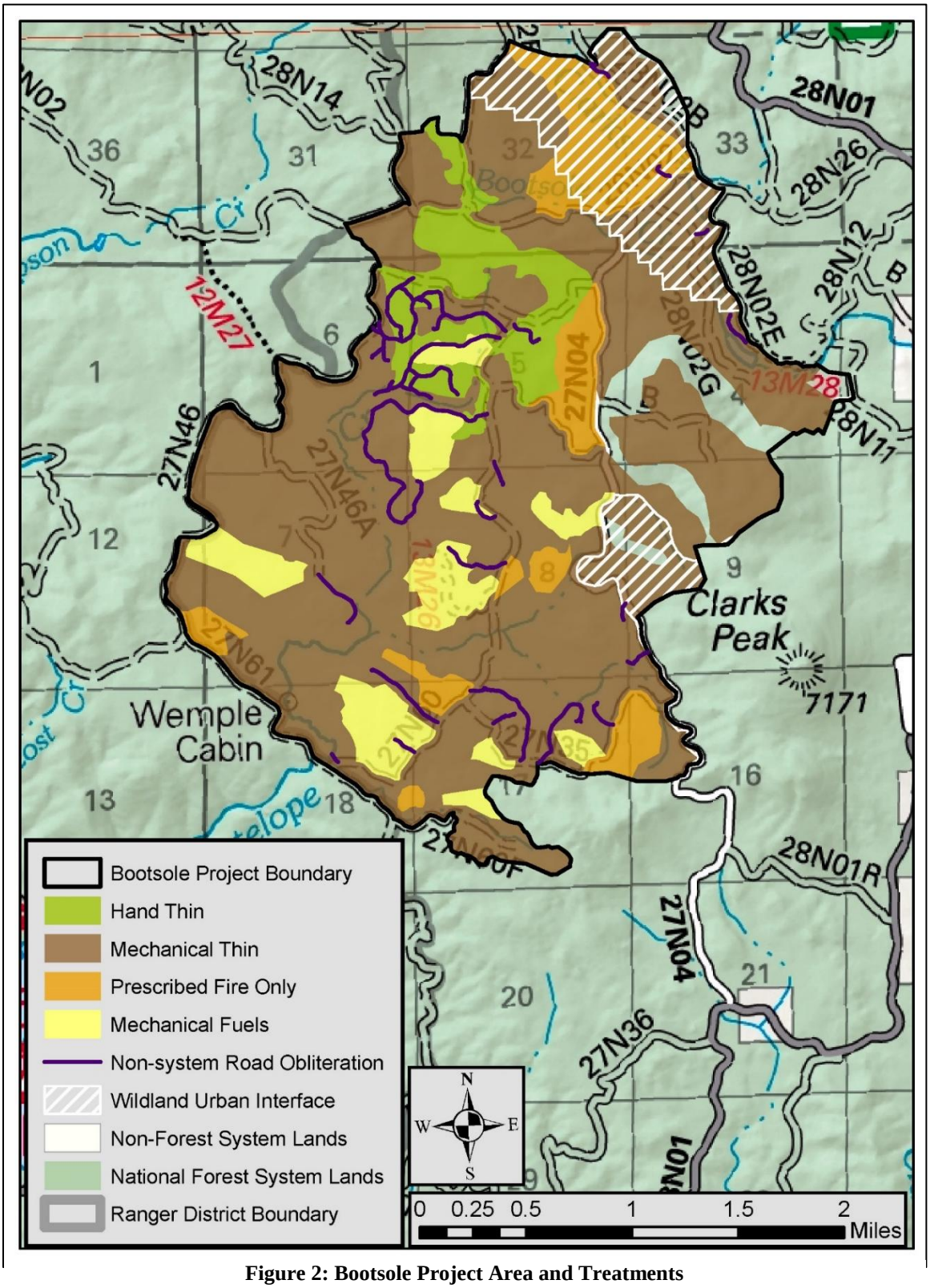

Figure 2: Bootsole Project Area and Treatments

ability to sustain diversity. Meadows are similarly being encroached upon by lodgepole pine and white fir, resulting in decreased meadow sizes and leading to the decline of meadow communities on the landscape.

A California Spotted Owl Protected Activity Center (CSO PAC) is located in the west-central portion of the project area. With the current fuel loading surrounding and within the PAC, there is a risk of habitat loss due to high-severity stand replacing fire. Several stand replacing wildfires have occurred near and adjacent to the project area in recent years including the Moonlight, Antelope, Diamond, Sheep, and Walker fires. The frequency of fires in the recent past and the high fuel loadings underscore the necessity of thinning stands to protect wildlife habitat in the project area, especially the CSO PAC, from being destroyed by high severity fire.

Furthermore, within the project area there are system roads in need of maintenance as well as multiple non-system roads that are contributing to decreased hydrologic function by changing natural drainage patterns, compacting soils, and contributing sediment to adjacent waterways.

To address these undesirable conditions, a list of proposed actions has been developed that would restore desired conditions and goals in the Bootsole project area as described in the Plumas National Forest Land and Resource Management Plan as amended by the Sierra Nevada Forest Plan Amendment (SNFPA) Final Environmental Impact Statement and Record of Decision (ROD). Opportunities were identified to meet goals related to forest structure and function, fire and fuels management, plant and animal communities, and wildlife habitat.

Based on the existing conditions described above, action is needed to:

- improve the growth and vigor of forest stands making them more resilient to drought stress, insect infestation, and disease outbreaks;
- reduce surface, ladder, and canopy fuels to reduce the size, intensity, and severity of fires within the Bootsole project area and increase the resilience of stands to wildfires;
- reduce conifer densities within aspen stands and meadows to promote vigorous, healthy aspen stands and meadow systems that can support diverse wildlife and plant species;
- reduce road-related impacts to the watershed within the project area.

Description of Treatments

Mechanical Thin

General Forest Stands

The project proposes to remove conifers less than 30 inches diameter at breast height (DBH) to promote resistance to disturbance (i.e. insects/disease, wildfire) and develop a more resilient stand that can better withstand current and predicted future conditions.

Conifer removal would be accomplished by individual tree selection utilizing Variable Density Thinning (VDT). Variable density thinning is a compilation of various thinning treatment elements; dense groups/clumps of trees, canopy openings (gaps) where few or no trees exist; and widely spaced trees within the matrix. This combination of activities would promote a mixture of tree sizes within a stand and across the landscape, restoring structural diversity while increasing fire resilience. A portion of smaller, healthy/vigorous trees would be left for diversity, structure, and to provide for the next generation of forest. Canopy cover and basal area would vary based upon stand type and stand potential.

In areas proposed for mechanical treatment, mechanical ground-based equipment would be used to harvest select trees greater than or equal to three inches DBH up to 30 inches DBH. Whole-tree yarding would be used when possible. Conifers ranging from 10.0 to 29.9 inches DBH would be removed and processed as sawlogs. Conifers ranging from 3.0 to 9.9 inches DBH would be removed as biomass chips where access for mechanical ground-based equipment and/or chip vans is not restricted. Existing downed wood would also be removed as biomass where levels are above desired condition. Where chip removal is not possible, biomass-size conifers may be treated on site through various mechanisms including: mastication; hand thin (using chainsaws), pile and burn; lop and scatter; and mechanical pile and burn. Equipment would generally be restricted to slopes of 35 percent or less although equipment could work on short pitches of slopes up to 45 percent outside of Riparian Conservation Areas.

Follow-up treatment may occur in some units to achieve desired conditions and remove material less than 3" DBH using mastication, pile and burn, or lop and scatter. Underburning may occur throughout some general forest stands as a secondary treatment.

Aspen

The project proposes to remove conifers within aspen stands to improve stand condition and wildlife habitat. Conifers would be removed from within aspen stands and where aspen occurs as a minor component within other forest types. Treatment would entail the removal of conifers located in the interior of aspen stands/clones and within a 150-foot extended treatment zone (ETZ) from the outer most aspen stem. Trees greater than 30.0 inches DBH would be removed. Exceptions to conifer removal in these areas would be shade-intolerant, fire-resistant trees that exhibit old growth/legacy characteristics such as platy bark, flat top; indicating their co-existence with the aspen prior to fire exclusion policies; these trees would need to show characteristics that indicate they are not a threat to aspen including slower growth and reduced seed production to be retained. Mechanical removal would be used where possible with hand thinning occurring in areas where mechanical treatment is not feasible due to site sensitivity, slope steepness, or accessibility.

Species such as juniper, lodgepole pine and white fir would not be retained. Lodgepole pine is a prolific seed producer and produces viable seed at an early age thus giving it a competitive edge in establishment and succession without disturbance. Also, white fir generally produces more cones along or within openings than in adjacent closed stands and is considered shade tolerant. This shade tolerance allows white fir to become established in the understory of aspen and gradually replace aspen as the dominant tree.

Aspen groves would be underburned to promote desired herbaceous plants, aspen regeneration (suckering), and reduce residual conifer regeneration. If above treatments fail to stimulate aspen growth response in decadent, declining aspen stands, aspen stems may be cut to stimulate new growth response. Temporary fencing around aspen stands may be installed post-treatment if needed based on monitoring. The temporary fencing would be installed and maintained by the Forest Service and would remain in place until determined to be effective by the interdisciplinary team.

Meadows

Removal of conifers within and around meadows would be accomplished using the same conifer parameters as the aspen units. Mechanical removal would be used where possible with hand thinning occurring in areas where mechanical treatment is not feasible due to site sensitivity, accessibility, or slope steepness. Meadow extended treatment zones (ETZs) would occur from existing meadow edges and extend up to 100 feet into forested stands. Meadow boundary delineators may include vegetation and soil composition, topography, changes in landform, or changes in soil moisture. Conifers within meadow

ETZs would be thinned, targeting lodgepole pine and white fir for removal of seed sources to maintain meadow habitats. Prescribed burning would be used in meadows to reduce conifer regeneration and promote herbaceous vegetation.

Thinning in aspen and meadows is not designed to meet objectives associated with fuels or stand densities, therefore the removal of trees greater than 30.0 inches DBH is permissible consistent with SNFPA ROD. (USDA 2004b, p.51).

Mechanical Fuels

Forest fuels less than 11 inches in diameter would be removed from 359 acres of the project area. This area includes stands that have desired spacing of overstory trees but abundant understory and ladder fuels. Thinned material would be chipped and removed as biomass where access for mechanical ground-based equipment and/or chip vans is not restricted. Where chip removal is not possible, biomass-size conifers may also be treated on site through various mechanisms including mastication; hand thin (using chainsaws), pile and burn; lop and scatter; and mechanical pile and burn.

Hand Thin

Hand thinning would be used to remove fuels less than 6 inches DBH from the 300-acre California Spotted Owl Protected Activity Center (PAC). California Spotted Owl PACs are designed to provide habitat for California Spotted Owls. Treatments are intended to help provide quality nesting and roosting habitat for current and/or future occupants, and to make the habitat more resilient to future disturbance. Fire-resistant trees would be promoted and shade-tolerant conifers would be prioritized for removal.

Stands would be hand thinned as needed to facilitate prescribed burning and to promote legacy[2] and critical habitat trees. Thinned materials would be piled for later burning. Areas around any critical habitat trees including nesting, roosting, and high-value legacy trees would be raked. Underburning would occur in these areas once the hand thinning and pile burning treatments have been completed.

Hand thinning may also occur in stands identified for mechanical thinning or mechanical fuels when mechanical treatments are not possible due to site sensitivity or prohibitive access.

Prescribed Fire

Within stands that do not meet conditions for thinning treatments, prescribed burning would be used to reduce heavy fuel loading of small diameter trees and promote dominant/co-dominant trees. This would result in creating a more resilient ecosystem less prone to catastrophic wildfire.

Approximately 3,770 acres of the project area would also be analyzed for reintroducing fire to the ecosystem through prescribed burning as a secondary treatment. Where it is not feasible or recommended to underburn, pile burning would be used to remove fuels. Prescribed burning in this project is planned with an efficient economy-of-scale approach. Incidental hand thinning with chainsaws may occur as needed to facilitate prescribed burning.

Transportation Management

Road Reconstruction and Maintenance

[2] Legacy trees display old-growth characteristics. For ponderosa and Jeffrey pine a legacy tree is defined as a tree that has the following characteristics: (1) platy, yellow bark on four panels (on at least ½ to ¾ of the bole), (2) downward or outward sweeping branches on at least the top 1/3 of the tree, and (3) a rounding or flat top, regardless of age or diameter.

The project proposes to repair, maintain, and/or reconstruct National Forest System roads that are contributing to watershed impacts. Action would be taken to improve road drainage, reduce erosion caused by concentrated road runoff, and reduce sedimentation from roads into the stream network. Specific miles of roads and road segments will be identified during project planning. Road treatments would be prioritized in areas with insufficient drainage, issues with water crossings, and roads contributing direct sedimentation to waterways.

Reconstruction would involve the widening of curves, excavating and/or placing fill material to reshape the roadbed so that runoff is less concentrated. Road dips with rock armored outlets may be installed to better disperse runoff from road surfaces. Construction of armored overflow dips at certain culverts would ensure that if the culvert is plugged, stream diversion along the road would be minimal. Additional improvements may include out- sloping road segments, constructing low water crossings, installation of rip-rap aprons on fill slopes, and replacing culverts.

Road maintenance may consist of installation of road dips to better disperse runoff from road surfaces, brushing, blading the road surface, and improving drainage.

Road Obliteration

Approximately 8.5 miles of routes not added to the National Forest Transportation System (NFTS) within the project area are proposed for obliteration. Obliteration may involve recontouring, subsoiling, or abandonment. Abandonment is appropriate where the road has become completely overgrown with vegetation. Obliteration may also involve removing drainage structures, restoring vegetative cover, blocking access, or some combination of these treatments. Obliterating roads would promote vegetative recovery, decrease compaction, increase infiltration into the roadbed, increase soil stability, and reduce erosion.

Project Design and Mitigation Measures Specific to Rare Plants and Non-Native Plants

Non-native Invasive Plants (NNIP)

- All equipment used off-road will be weed-free prior to entering National Forest System (NFS) lands.
- Non-native invasive species (including noxious weeds) identified before or during ground-disturbing activities will be pulled or cut according to species composition and project constraints. Equipment will be washed before moving from an infested area to a non-infested area, whether or not the noxious weeds present were pulled or cut. Equipment staging will be done in weed-free areas.

BIOLOGICAL ASSESSMENT

USFWS LISTED THREATENED, ENDANGERED, OR PROPOSED SPECIES

Initial consultation with U.S. Fish and Wildlife Service (USFWS) consists of determining whether any Federally listed Threatened, Endangered, or Proposed species are known from within the counties included in the project area (Plumas County). Since the proposed project is very close to the Lassen-Plumas County border, Lassen County was included as well. Therefore, the latest USFWS species list for Lassen and Plumas Counties was accessed from the USFWS iPAC website on January 4, 2021 (USFWS 2021). This list fulfills the requirements to provide a current list of Threatened, Endangered, and Proposed plant species pursuant to Section 7(c) of the Endangered Species Act, as amended.

The USFWS list of Threatened, Endangered, or Candidate plant species for Lassen and Plumas counties includes 4 species, none of which is known from the Beckwourth RD (Table 2) and habitat for them is marginal or not found on the District (see below).

Table 2. USFWS listed plant species reported from the counties in which the Bootsole Project is planned (Lassen and Plumas counties). None of these species are known from the Beckwourth RD.

Species	Common Name	Federal Status	Habitat[1]
Orcuttia tenuis	slender Orcutt grass	Threatened	Often gravelly… • Vernal pools
Ivesia webberi	Webber ivesia	Threatened	Sandy or gravelly • Great Basin scrub (volcanic ash) • Lower montane coniferous forest • Pinyon and juniper woodland
Tuctoria greenei	Greene's Tuctoria	Endangered	Vernal pools
Pinus albicaulis	Whitebark Pine	Proposed Threatened	Upper montane and sub-alpine forests

[1] CNPS 2021 http://rareplants.cnps.org

Orcuttia tenuis is listed as a Threatened species for Lassen and Plumas Counties. It is found in vernal pools from 115-5775 ft elevation (CNPS 2021). The nearest known population, and only documented occurrence in Plumas County, is +/-30 miles to the west on the west shore of Lake Almanor (CNPS 2021). Intensive field surveys of the project area did not locate any of this species.

Ivesia webberi is listed as a Threatened species for Plumas County. It is found in sagebrush, juniper woodlands, and associated conifer forests from 3300-6800 ft elevation (CNPS 2021). The nearest known populations are +/-25 miles southwest in Plumas County near Quincy, where it is considered to be extirpated, and +/-35 miles southeast in Plumas and Sierra counties around the east side of Sierra Valley (CNPS 2021). Intensive field surveys of the project area did not locate any of this species.

Tuctoria greenei is listed as an Endangered species. It is found in vernal pools from 100 -3,510 ft elevation (CNPS 2021). The nearest known occurrence in Shasta County, is +/-60 miles northwest of the project area in Shasta County near Murkin Lake (CNPS 2021). Intensive field surveys of the project area did not locate any of this species.

Pinus albicaulis is a proposed Threatened species in Lassen County. It is found on dry, rocky soils on exposed slopes of upper montane and subalpine forests to timberline from 6,000 – 11,000 ft. elevation in

California (Fryer 2002). The nearest known populations are +/-50 miles northwest in Shasta County on Mount Lassen , and +/- 50 miles southeast in Washoe County, NV on Peavine Peak. There is no habitat present in the project area and intensive field surveys of the project area did not locate any of this species.

There is no suitable habitat for Threatened, Endangered, or Proposed plant species present within or near the project area. Thus, no formal or informal consultation with the USFWS has been conducted and these species will not be discussed in the effects section of this biological assessment/evaluation.

DETERMINATION

It is my determination that the Bootsole Project will not affect any Federally listed plant species or any proposed critical habitat.

BIOLOGICAL EVALUATION

CURRENT MANAGEMENT DIRECTION

Forest Service Manual and Handbooks (FSM/H 2670).
Forest Service Sensitive species are plant species identified by the Regional Forester for which population viability is a concern. The Forest Service develops and implements management practices to ensure that Sensitive plant and animal species do not become threatened or endangered and to ensure their continued viability on National Forests. It is Forest Service policy to analyze impacts to Sensitive species to ensure management activities do not create a significant trend toward federal listing or loss of viability. This assessment is documented in a Biological Evaluation (BE).

Sierra Nevada Forest Plan Amendment, Plant Surveys (USDA Forest Service 2004b, 2005).
Conduct field surveys for Threatened, Endangered and Sensitive plant species early enough in the project planning process that the project can be designed to conserve or enhance Threatened, Endangered and Sensitive plants and their habitat. Conduct surveys according to procedures outlined in the Forest Service Handbook (FSH 2609.25.11). The standards and guidelines provide direction for conducting field surveys, minimizing or eliminating direct and indirect impacts from management activities and adherence to the Regional Native Plant Policy (USDA Forest Service 2004b).

Plumas National Forest Land and Resource Management Plan (USDA Forest Service 1988).
The Forest Plan provides management direction for all Plumas National Forest Sensitive plants; that direction is to "maintain viable populations of Sensitive plant species" (USDA Forest Service 1988, page 4-34). The Forest Plan also provides forest-wide standards and guidelines to:

- Protect Sensitive and Watch List (Special Interest) plant species as needed to maintain viability;
- Inventory and monitor Sensitive plant populations on an individual project basis; and
- Develop species Management Guidelines to identify population goals and compatible management activities/prescriptions that will maintain viability.

Plumas National Forest Interim Management Prescriptions for Threatened, Endangered, Sensitive (TES) and Watch List (Special Interest) Plants (USDA Forest Service 2014).
Management guidelines have been developed for all TES and Watch List (Special Interest) plant species on the Plumas National Forest. This represents Forest Supervisor's direction to "ensure that these prescriptions are being applied appropriately to ensure compliance with our Land & Resource Management Plan." Specific management prescriptions are given in the discussion of the effects of the proposed project on each species in the Environmental Consequences section below.

SENSITIVE PLANT SPECIES

US Forest Service Region 5 Sensitive Plant Species
Table 3 lists all Sensitive plant species known from the Plumas National Forest (USDA Forest Service 2014). No other Sensitive plant species have known occurrences or potential habitat on the Plumas National Forest. **No sensitive species were identified in the project area. Species which are not known in the project area, or with no habitat in the project area based on the reasons given in Table 3, are not further analyzed in this document.**

Table 3. Sensitive Vascular Plants, Bryophytes, Lichens, and Fungi on the Plumas National Forest

Species name/Common name	Known occurrence in project area	Potential habitat present but plant not present	No habitat in project area	Habitat unsuitable based on the following
Allium jepsonii Jepson's onion			X	Serpentine soils at lower elevations. No occurrences in Plumas Co.
Astragalus lemmonii Lemmon's milk-vetch		X		
Astragalus lentiformis lens-pod milk-vetch		X		
Astragalus pulsiferae var. *coronensis* Modoc Plateau milk-vetch		X		
Astragalus pulsiferae var. *pulsiferae* Pulsifer's milk-vetch		X		
Astragalus webberi Webber's milk-vetch			X	Found at lower elevations in open, dry woodlands
Balsamorhiza macrolepis big-scale balsamroot		X		
Boechera constancei Constance's rockcress			X	Serpentine soils not present in project area.
Botrychium ascendens upswept moonwort		X		
Botrychium crenulatum scalloped moonwort		X		
Botrychium lunaria common moonwort		X		
Botrychium minganense Mingan moonwort		X		
Botrychium montanum western goblin		X		
Botrychium pinnatum northwestern moonwort		X		
Bruchia bolanderi Bolander's brachia		X		
Buxbaumia viridis buxbaumia moss		X		
Calycadenia oppositifolia Butte County calycadenia			X	Found at lower elevations than project area in open foothill woodland, chaparral, and valley grasslands
Clarkia gracilis ssp. *albicaulis* white-stemmed clarkia			X	Found at lower elevations than project area in Westside foothill open areas.

Species name/Common name	Known occurrence in project area	Potential habitat present but plant not present	No habitat in project area	Habitat unsuitable based on the following
Clarkia mildrediae ssp. *mildrediae* Mildred's clarkia			X	Project is east of known range
Clarkia mosquinii Mosquin's clarkia			X	Found at lower elevations than project site in Westside foothill woodland
Cypripedium fasciculatum clustered lady's-slipper			X	Project is east of known range
Cypripedium montanum mountain lady's-slipper			X	Project is northeast of known range
Dendrocollybia racemosa branched collybia		X		
Eleocharis torticulmis California twisted spikerush			X	Project northeast of known range, found at lower elevations than project area
Eremogone cliftonii Clifton's eremogone			X	Project northeast of known range
Eriogonum microthecum var. *schoolcraftii* Schoolcraft's wild buckwheat			X	Found on east side of Sierra Nevada's in Great Basin Scrub/Pinyon and Juniper woodland
Eriogonum umbellatum var. *ahartii* Ahart's buckwheat			X	Serpentine soils at lower elevations than project area
Fissidens aphelotaxifolius brook pocket moss			X	Out of range.
Fissidens pauperculus minute pocket moss			X	Project northeast of known range. Found at lower elevations
Frangula purshiana ssp. *ultramafica* Caribou coffeeberry			X	Project northeast of known range. Found in serpentine soils
Fritillaria eastwoodiae Butte County fritillary			X	Project northeast of known range. Found at lower elevations
Helodium blandowii Blandow's bog moss		X		
Ivesia aperta var. *aperta* Sierra Valley ivesia		X		.
Ivesia sericoleuca Plumas ivesia		X		
Ivesia webberi Webber's ivesia		X		

Species name/Common name	Known occurrence in project area	Potential habitat present but plant not present	No habitat in project area	Habitat unsuitable based on the following
Juncus luciensis Santa Lucia dwarf rush		X		
Lewisia cantelovii Cantelow's lewisia			X	Found at lower elevations than project area on granite cliff faces, rocky outcrops
Lewisia kelloggii ssp. *hutchisonii* Hutchison's lewisia		X		
Lewisia kelloggii ssp. *kelloggii* Kellogg's lewisia		X		
Lomatium roseanum adobe lomatium		X		
Meesia uliginosa broad-nerved hump moss		X		
Mielichhoferia elongata elongate copper moss		X		
Monardella follettii Follett's monardella			X	Serpentine soils not found in project area.
Monardella stebbinsii Stebbins' monardella			X	Rocky serpentine soils not found in project area
Oreostemma elatum tall alpine-aster			X	Project east of known range. Found at lower elevations.
Packera eurycephala var. *lewisrosei* Lewis Rose's ragwort			X	Serpentine soils not found in project area.
Packera (*Senecio*) *layneae* Layne's ragwort			X	Out of range. Found at lower elevations. Serpentine soils
Peltigera gowardii veined water lichen			X	Project northeast of known habitat of cool, clear, shallow, spring-fed perennial streams.
Penstemon personatus closed-throated beardtongue			X	Project east of known range
Penstemon sudans Susanville beardtongue		X		
Phaeocollybia olivacea Olive phaeocollybia			X	No habitat
Poa sierrae Sierra blue grass			X	Found at lower elevations west of project area
Pyrrocoma lucida sticky pyrrocoma		X		Eastside
Sedum albomarginatum Feather River stonecrop			X	Found in serpentine soils at lower elevations than project

FIELD RECONNAISSANCE

All treatment areas of the Bootsole Project were surveyed at least one time during the 2019 and 2020 field season for Threatened, Endangered, Proposed, and Sensitive plant species (TEPS), Watch List (Special Interest) plant species, and invasive plant species (noxious weeds) by Forest Service botanists (2019) or Lassen Fire Safe Council, Inc.(LFSC) botanical consultants (2020).

Botanical surveys focused on rare species with potential habitat. However, surveys were floristic in nature and an attempt was made to identify all plants encountered in the field. Many species have specific habitat preferences (such as serpentine outcrops or wetlands), and botanists searched for these habitats as well as their constituent species. Documentation of field surveys is filed in the District botany office and in the GIS files of official record (NRIS).

100% of the project area has been adequately surveyed or analyzed for Threatened, Endangered, Proposed, and Sensitive plant species (TEPS).

Field surveys did not identify any sensitive species within the project area.

DETERMINATION

The Effects Determination discussed here is based on professional experience and judgment, existing information, including existing condition of the analysis area, and the potential impacts of the proposed project. An effects determination is also the culmination of potential direct, indirect, and cumulative effects. **The proposed project will not affect Region 5 sensitive plant species.**

BOTANY REPORT

PURPOSE

The Plumas National Forest maintains a watch list of plant species that are of conservation concern, but have not been designated as Sensitive by the Regional Forester. This Watch List (Special Interest plant list) includes species that are newly described, locally rare, range extensions or disjunct populations, plants of specific public interest, and species with too little information to determine their appropriate status. According to the Regional Forester, Watch List (Special Interest) plant species should be considered during project planning with corresponding documentation maintained in the planning file (USDA Forest Service 2006). These species make an important contribution to forest biodiversity and should be protected under the provisions of the National Forest Management Act (NFMA).

The purpose of the Botany Report is to document our consideration of Watch List (formerly called Special Interest) plant species that may be impacted by project activities. This report also recommends protection measures where necessary to prevent Watch List (Special Interest) species from being elevated to the Sensitive species list. A note about revegetation of disturbed areas with native species is included at the end of this section.

CURRENT MANAGEMENT DIRECTION

Plumas National Forest Land and Resource Management Plan (USDA Forest Service 1988).
The Forest Plan provides management direction for all Plumas National Forest Sensitive plants. That direction is to "maintain viable populations of sensitive plant species" (USDA Forest Service 1988, page 4-34). The Forest Plan also provides forest-wide standards and guidelines to:

- Protect sensitive and special interest plant species as needed to maintain viability;
- Inventory and monitor sensitive plant populations on an individual project basis; and
- Develop species Management Guidelines to identify population goals and compatible management activities/prescriptions that will maintain viability.

Watch List (Special Interest) plant species.
Management direction for Watch List (Special Interest) Species is established at the level of the individual Forest (USDA Forest Service 2006). On the Plumas National Forest (USDA Forest Service 2014) Watch List (formerly called Special Interest) plant species are those species that are of a global concern but do not meet the criteria for the regional Forester's Sensitive species list. General management direction is to survey and recommend conservation measures for these species. Management prescriptions for Watch List (Special Interest) species are usually not as strict as they are for Sensitive species due to the lesser level of rarity represented by these species. However, some species being reviewed for addition to the Regional Forester's Sensitive species list may also be on the Watch List (Special Interest) plant list and usually have more restrictive management requirements.

Plumas NF Interim Management Prescriptions for TES and Watch List (Special Interest) plant species.
Management guidelines have been developed for all TES and Watch List (Special Interest) plant species on the Plumas National Forest (USDA Forest Service 2014). This represents the Forest Supervisor's direction to "ensure that these prescriptions are being applied appropriately to ensure compliance with our Land & Resource Management Plan." Specific management prescriptions are given in the discussion of the effects of the proposed project on each species in the Effects section below.

Watch List (Special Interest) plant species should be considered during project planning and documentation retained in the planning file (USDA Forest Service 2006). These species make an important contribution to forest biodiversity and should be maintained under the provisions of the

National Forest Management Act. Therefore, they must be addressed throughout the National Environmental Policy Act (NEPA) process. Potential impacts to these species including context, intensity, and duration of likely effects should be analyzed during project planning.

FIELD RECONNAISSANCE

All treatment areas of the Bootsole Project was surveyed at least one time between 2019 and 2020 for Threatened, Endangered, Proposed, and Sensitive plant species (TEPS), Watch List (Special Interest) plant species, and invasive plant species (noxious weeds) by Forest Service botanists and LFSC Botanical consultants. Botanical surveys focused on rare species with potential habitat. However, surveys were floristic in nature and an attempt was made to identify all plants encountered in the field. Many species have specific habitat preferences (such as serpentine outcrops or wetlands), and botanists searched for these habitats as well as their constituent species. Documentation of field surveys is filed in the District botany office and in the GIS files of official record (NRIS).

WATCH LIST (SPECIAL INTEREST) PLANT SPECIES

PNF Watch list species with the potential to occur within the project area based on known occurrences and habitat include:

Artemesia tripartita ssp. Tripartita, treetip sagebrush
Carex sheldonii, Sheldon's sedge
Chenopodium simplex, large-seeded goosefoot
Claytonia umbellata, Great Basin Claytonia
Erigeron lassienianus var. deficiens, Plumas rayless daisy
Hesperocyparis bakeri, Baker's cypress
Lomatium foeniculaceum var macgougalii, MacDougal's lomatium
Penstemon janishiae, Janish's beardtongue
Rhamnus alnifolia, alder buckthorn
Scutellaria galericulata, marsh skullcap
Trichodon cylindricus, cylindrical trichodon moss
Trifolium lemmonii, Lemmon's clover

There is approximately .001 acres occupied by Plumas National Forest Watch List (Special Interest) plant species in the project area. Table 4 lists all Watch List (Special Interest) plant species found within the project area and the amount of this acreage that may be affected by project activities.

Table 4. Plumas National Forest Watch List (Special Interest) plant species located within the project area

Species	Common Name	Global Rank[1]/CA Rank[2]/ CRPR[3]	Acres in Project Area
Scutellaria galericulata	Marsh skullcap	G5/S2/2B.2	.001

[1]Global Rank: G1- Critically Imperiled; G2- Imperiled, G3- Vulnerable, G4- Apparently secure, G5- Secure; T-Rank applies to a subspecies or variety, NR- Rank Not Yet Assessed (CNPS 2020).
[2]CA Rank = The state rank (S-rank) is assigned much the same way as the global rank, but state ranks refer to the imperilment status only within California's state boundaries (CNPS 2020)
[3]CRPR = California Rare Plant Rank (CNPS 2020): 1B- Plants Rare, Threatened, or Endangered in California and Else-where, 2- Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere, 3- Plants About Which We Need More Information, 4- Plants of Limited Distribution – A Watch List; and Threat Rank: 0.1- Seriously threatened in California, 0.2- Fairly threatened in California, 0.3- Not very threatened in California.

EFFECTS OF THE PROPOSED PROJECT

Scutellaria galericulata (marsh skullcap)

Scutellaria galericulata, marsh skullcap, is a hardy perennial herb native to northern areas of the Northern Hemisphere, including Europe, Asia, and almost all of Canada. It is a member of the mint family. The form is upright and is usually 20 to 45 centimeters in height, sometimes reaching up to 80. It is a wetland-loving species and grows along fens, marshes, seeps, and shorelines. The blue flowers are 1 to 2 centimeters long. The flowers are in pairs and are all on the same side of the stem. The flowers do not appear at the top of the stem. The Latin galericulata means "hooded", relating to the length of the flower's tube being much longer than the calyx. The species is possibly threatened by hydrologic alterations and recreational activities (CNPS 2021).

There is one occurrence of *Scutellaria galericulata* known from within the project area on Antelope Creek.

PNF management prescription: *Maintain hydrologic conditions. Evaluate activities and use mitigations consistent with Riparian Conservation Objectives (USDA 2004b). If the establishment of a no-disturbance buffer is appropriate, consider the following when determining the size and shape of the buffer: site conditions, topographic position, slope, aspect, stand structure (including canopy height), intensity of the proposed management activity, and proximity to water.*

Direct and Indirect Effects

The *Scutellaria galericulata* occurrence is in an area that will not be impacted by proposed treatment activities due to its proximity to Antelope Creek and integrated design features that provide equipment exclusion buffers around riparian areas. Even so, plants will be flagged and avoided with a Botany Control Area established around the occurrence. This will protect the plants from any incidental, avoidable damage from treatment implementation and site access.

See the Botany Protection Plan (page 30) for details about planned management of the Botany Controlled Areas established for the protection of *Scutellaria galericulata* (marsh skullcap).

REVEGETATION OF DISTURBED AREAS WITH NATIVE SPECIES

All activities that require seeding or planting would need to use only locally collected native seed sources. Examples of proposed activities that may need to be seeded are road closures, landings, or skid trails. This would implement the USFS Region 5 policy (USDA Forest Service 1994) that directs the use of native plant material for revegetation and restoration for maintaining "the overall national goal of conserving the biodiversity, health, productivity, and sustainable use of forest, rangeland, and aquatic ecosystems." An alternative method of erosion control where erosion is a particular concern and where adequate sources of local native seed are not available is to use weed-free seed or weed-free straw with seed-heads of non-persistent cereal grains such as white oats. This would provide erosion control until native species can naturally seed in.

NOXIOUS WEED RISK ASSESSMENT

INTRODUCTION

Forest management activities, such as those associated with fuels reduction/forest health improvement, can contribute to the introduction and spread of invasive plant species, including noxious weeds, by creating suitable environmental conditions for establishment and by acting as vectors for spread. This Noxious Weed Risk Assessment has been prepared to evaluate the risk of noxious weed introduction and spread as a result of the Bootsole Project. The risk assessment focuses on California Department of Food and Agriculture (CDFA) listed noxious weeds (also called Non-native Invasive Plant species – NNIP). This assessment is in compliance with the Plumas National Forest Land and Resource Management Plan (LRMP) (USDA Forest Service 1988), the Sierra Nevada Forest Plan Amendment (SNFPA) Final Environmental Impact Statement Record of Decision (ROD) (USDA Forest Service 2004b), and direction in the Forest Service Manual (FSM) section 2900, Invasive Species Management (USDA Forest Service 2011; this superseded FSM section 2080, Noxious Weed Management, in Dec. 2011).

MANAGEMENT DIRECTION

Forest Service Manual

Overall objectives in FSM 2900 involve management of aquatic and terrestrial invasive species based on an integrated pest management approach, prioritizing 1) prevention and 2) early detection and rapid response actions as necessary, as well as 3) control and management and 4) restoration. The FSM includes a policy statement calling for a risk assessment for invasive species to be completed for any proposed action. Some FSM 2900 policy statements particularly relevant to project planning are as follows:

- Determine the risk of introducing, establishing, or spreading invasive species associated with any proposed action, as an integral component of project planning and analysis, and where necessary provide for alternatives or mitigation measures to reduce or eliminate that risk prior to project approval.
- Initiate, coordinate, and sustain actions to prevent, control, and eliminate priority infestations of invasive species in aquatic and terrestrial areas of the National Forest System using an integrated pest management approach, and collaborate with stakeholders to implement cooperative invasive species management activities in accordance with law and policy.
- Determine the vectors, environmental factors, and pathways that favor the establishment and spread of invasive species in aquatic and terrestrial areas the National Forest System, and design management practices to reduce or mitigate the risk for introduction or spread of invasive species in those areas.
- Ensure that all Forest Service management activities are designed to minimize or eliminate the possibility of establishment or spread of invasive species on the National Forest System, or to adjacent areas.
- Use contract and permit clauses to require that the activities of contractors and permittees are conducted to prevent and control the introduction, establishment, and spread of aquatic and terrestrial invasive species.
- Make every effort to prevent the accidental spread of invasive species carried by contaminated vehicles, equipment, personnel, or materials (including plants, wood, plant/wood products, water, soil, rock, sand, gravel, mulch, seeds, grain, hay, straw, or other materials).
    - Establish and implement standards and requirements for vehicle and equipment cleaning to prevent the accidental spread of aquatic and terrestrial invasive species on the National Forest System or to adjacent areas.

- Make every effort to ensure that all materials used on the National Forest System are free of invasive species and/or noxious weeds (including free of reproductive/propagative material).

Sierra Nevada Forest Plan Amendment (SNFPA)

The Record of Decision (ROD) for the SNFPA amends the management direction in the LRMP for the Plumas National Forest to address management of noxious weeds and invasive species. The management goals and strategies for noxious weed management given in Appendix A of the SNFPA ROD stress three priorities: 1) Prevent the introduction of new invaders, 2) Conduct early treatment of new infestations, and 3) Contain and control established infestations. Provisions for implementing these goals are detailed in the Forest-wide Standards and Guidelines in Appendix A. The noxious weed management standards and guidelines state that a noxious weed risk assessment needs to be conducted to determine the risks for weed spread associated with different types of proposed management activities. Other SNFPA standards and guidelines that apply to this project for noxious weed management include:

- As part of project planning, conduct a noxious weed risk assessment to determine risks for weed spread (high, moderate, or low) associated with different types of proposed management activities.
- When recommended in project-level noxious weed risk assessments, consider requiring off-road equipment and vehicles (both Forest Service and contracted) used for project implementation to be weed free.
- Minimize weed spread by incorporating weed prevention and control measures into ongoing management or maintenance activities that involve ground disturbance or the possibility of spreading weeds.
- Conduct follow-up inspections of ground disturbing activities.
- Encourage use of certified weed free hay and straw.

RISK ASSESSMENT

This Noxious Weed Risk Assessment has been prepared to evaluate the risk of noxious weed introduction and spread as a result of the Bootsole Project. This evaluation is a nine-step process to assess the relationship between the proposed action and NNIP prevalence in the project area. The nine steps are: 1) Inventory, 2) Known noxious weeds, 3) Current habitat vulnerability, 4) Non-project dependent vectors (factors not dependent on the proposed action) 5) Habitat alteration expected as a result of project, 6) Increased vectors as a result of project implementation (factors dependent on the proposed action) 7) Noxious weed control and prevention measures (recommended design criteria and standard operating procedures), 8) Anticipated weed response to proposed action, and 9) Costs.

1. Inventory.

All of Bootsole Project was surveyed at least one time between 2019 and 2020 for Threatened, Endangered, Proposed, and Sensitive plant species (TEPS), Watch List (Special Interest) plant species, and invasive plant species (noxious weeds) by Forest Service botanists (2019) and LFSC Botanical consultants (2020). Most roadsides were observed numerous times during these surveys, especially for invasive species (noxious weeds). Botanical surveys focused on rare species with potential habitat and invasive species (noxious weeds). However, surveys were floristic in nature and an attempt was made to identify all plants encountered in the field. Many species have specific habitat preferences (such as serpentine outcrops or wetlands), and botanists searched for these habitats as well as their constituent species. Documentation of field surveys is filed in the District botany office and in the GIS files of official record (NRIS).

Inventory summary

Adequate noxious weed surveys have been completed within the project area.

2. Known noxious weeds.

Two noxious weed species were located within or adjacent to the project area. Information about these species is summarized in Table 5.

Table 5. Noxious weed species located within or near to the project area. CA=botany Controlled Area

Species	Common Name	CDFA Category[1]	Number of sites/acres within project area	Project implications
Cirsium arvense	Canada thistle	B-rated	10/.55 acres	CA to avoid by all project activities
Cirsium vulgare	Bull thistle	C-rated	Not recorded	Not managed

[1]The California Department of Food and Agriculture's noxious weed list (CDFA 2010) divides noxious weeds into categories A, B, and C (CDFA 2011): A-listed weeds are those for which eradication or containment is required at the state or county level; B-listed weeds are those where eradication or containment is at the discretion of the County Agricultural Commissioner; and C-listed weeds require eradication or containment only when found in a nursery or at the discretion of the County Agricultural Commissioner.

The CDFA C-rated noxious weed species, Bull thistle (*Cirsium vulgare*) has scattered occurrences within the project area and across the Plumas National Forest. However, this species is not managed on the Plumas National Forest, or by Plumas County, due to their common occurrence and their generally successful control within the state. These two species are not mapped or tracked on the Plumas National Forest and in general there is no attempt to control them.

The other CDF rated species found within the Project area is managed on the Plumas National Forest. The B-rated Canada thistle (*Cirsium arvense*) is under active management on the Beckwourth Ranger District. Infestations are relatively small.

Canada thistle (*Cirsium arvense*) is an herbaceous perennial in the sunflower family. It is found scattered throughout California, except in the Sonoran and Mojave Deserts and the southern Sierra Nevada. Canada thistle can form dense patches which may crowd out native vegetation. This clump-forming plant reproduces by seed and vegetatively from its extensive root system. Control is difficult because root fragments as small as ½ inch can sprout to form a new plant, and seeds are dispersed by small animals, wind, and human activities. Control can be achieved with continued cultivation, mowing, or hand-cutting (Cal-IPC 2012).

Canada thistle sites within the project area with potential to come in contact with project activities will be flagged and avoided. ***There will be control measures for Canada thistle as part of this project. Sites in the Project area will be flagged and avoided.***

Bull thistle (*Cirsium vulgare*) was probably introduced in North America during colonial times. It is naturalized and widespread throughout North America and is found on every continent except Antarctica (Bossard et al. 2000). It is most common in disturbed areas with little to no canopy and is often found along roads with little shade cover. It is common along most Forest Service roads on the Plumas National Forest. Although not native, bull thistle plants provide forage for many native insect species. Butterflies and bees are frequently observed on these plants. Furthermore, bull thistle does not spread by rhizomes or other creeping roots and does not produce allelopathic chemicals like some other A and B rated noxious

weeds (Bossard et al. 2000). Two biocontrol insects (*Urophora stylata* and *Rhinocyllus conicus*) have been released and help reduce population levels. ***There will be no control measures for bull thistle as part of this project.***

Known Noxious Weeds Summary

The presence of numerous small occurrences of a priority species found within the project area that will be flagged and avoided leads to the conclusion that there is a MODERATE risk from known noxious weeds.

3. Current habitat vulnerability.

Vulnerability to noxious weed invasion and establishment is greatly influenced by plant cover, soil cover, and over-story shade. Areas become more susceptible to noxious weed invasion when these components are removed. Wildland fire and logging are sources of disturbance that can greatly alter vulnerability to noxious weed invasion. However, once the native vegetation reestablishes, the conditions that favor noxious weed establishment are no longer present. These higher elevation portions of the District tend to have far fewer invasions of noxious weeds than the lower elevations.

There has been an extensive series of timber projects carried out within the analysis area over the past 25 years. Also, the analysis area includes a widespread road system.The lower presence of noxious weeds is therefore remarkable. However, complacency is not appropriate as many noxious weed species are still expanding their ranges in California. Much of the land around the Project area is National Forest land. The private land in the area has also experienced extensive logging activity in the past and this activity will likely continue. These activities increase the overall vulnerability of the area to noxious weed invasion. There are approximately 38 miles of roads within the project area that will potentially be used for project activities. Road density within the general region of the project area is similar to that within the project area. Roads facilitate the movement of weeds into uninfested areas.

Current Habitat Vulnerability Summary

Although a considerable amount of logging activity has occurred in and around the project area, and on nearby private land, invasive species have in general remained relatively low; also, the relatively high elevation of the project area is less conducive to the spread of certain lower elevation invasive species; thus the overall habitat vulnerability is LOW.

4. Non-project dependent vectors.

Non-project dependent weed vectors include roads and recreational activities including camping, hiking, horse-back riding, and hunting. The areas at greatest risk in this proposed project area are those located next to roads. Roads can provide dispersal of exotic species via three mechanisms: providing habitat by altering conditions, making invasion more likely by stressing or removing native species, and allowing easier incidental introduction by wild or human vectors. There are approximately 38 miles of roads within the project area that will potentially be used for project activities. Road density within the general region of the project area is similar to that within the project area. The area is primarily used by wood cutters, Off-Highway Vehicle (OHV) riders, horseback riders and some camping in undeveloped camp areas. The high concentration of roads combined with the moderate amount of OHV use and recreation that occurs in the area contributes to a moderate-to-high risk of noxious weed invasion.

Non-Project Dependent Vectors Summary

Due to the high concentration of roads and the moderate amount of OHV use and recreation that occurs in the area the overall risk of noxious weed invasion is moderate-to-high.

5. Habitat alteration expected as a result of project.

Summary of Proposed Project Activities

See pages 8-11 above for descriptions of proposed project activities.

Mechanical thinning, Mechanical fuel treatments, hand thinning, tractor piling of trees and/or shrubs, pile burning, biomass removal: Treatments in conifer stands would selectively remove conifers, using variable density silviculture prescriptions to promote a mixture of tree sizes and structural diversity resulting in more open stands. Soil disturbance associated with mechanized thinning, machine piling, pile burning, and fire-line construction may create ground disturbance that favors the establishment of early seral species. Many noxious weeds are adapted to such environments. Also, many native species such as *Lupinus spp., Ceanothus spp., Clarkia spp.*, and many grasses readily establish in disturbed areas. Consequently, the creation of a disturbed area does not necessarily translate into the creation of habitat that will only be populated by noxious weeds.

A second important element in noxious species establishment is sunlight. Keeley & Beyers (2001) explain that most alien species are highly intolerant of shading. Project thinning activities will open canopy cover to <40% throughout the project area. This could potentially aid in the establishment of many invasive species that require high levels of sunlight.

Underburn: Prescribed underburns are designed to reduce excess live and dead vegetation and move the area towards the desired fuel condition. This type of burning is initiated when fuel moistures are low enough to safely carry fire and still meet resource objectives. Firelines constructed by hand are scraped to mineral soil to a minimum of two feet wide and vegetation cleared to a minimum width of six feet. Dead fuel would be scattered away from the mineral soil scrape to reduce fire intensity along the fire line. Machine lines, constructed with mechanized equipment, would be scraped to mineral soil a minimum of six feet and vegetation cleared to a minimum of ten feet.

Underburning in the areas associated with this project is not expected to create environmental conditions favorable to noxious weed invasion. The prescribed underburns will occur in the spring or fall when fuel moisture levels, temperature, and humidity are favorable for a low intensity burns that will not completely remove the duff layer nor remove the canopy.

Data suggest the degree of fire-induced disturbance is an important factor in post fire noxious weed invasion. According to Crawford (cited in Keeley & Beyers 2001), studies of high and low intensity burns showed that noxious weed invasion is favored when fire intensity is sufficient to open the canopy and destroy the litter layer. Also, Brooks et al. (citing Keeley et al. in preparation) explains how recent studies throughout the southern Sierra Nevada have shown cheatgrass (*Bromus tectorum*) invasions to be the most predictable in forest patches that were burned with high intensity. He explains that such impacts could be potentially more profound now due to unnaturally high fuel loads. A goal of this project is to reduce the unnaturally high fuel loads that would support the sort of high intensity wildfire that would result in favorable conditions to noxious weed invasion. Furthermore, it has been shown that treatments that reduce surface fuels, such as prescribed fire, can result in a profound reduction in fire intensity and can be effective for up to 10 years post treatment (Omi et al. 2006).

Habitat Alteration Summary

Some project activities will disturb soil and remove some overstory shade, creating environmental conditions favorable to noxious weed invasion. In addition to noxious weeds, many native early seral species will be favored by canopy thinning activities. The combined effect of the proposed action-dependant factors will result in a MODERATE risk to noxious weed invasion.

6. Increased vectors as a result of project implementation

Road Reconstruction / Improvement

Performing operationally required road access improvements in the project area includes road reconstruction, repair and maintenance. Road improvements would consist of brushing, blading the road surface, improving drainage, and replacing/upgrading culverts where needed. Approximately 8.5 miles of routes not added to the National Forest Transportation System (NFTS) within the project area are proposed for obliteration. Obliteration may involve recontouring, subsoiling, or abandonment. Abandonment is appropriate where the road has become completely overgrown with vegetation. Obliteration may also involve removing drainage structures, restoring vegetative cover, blocking access, or some combination of these treatments. Obliterating roads would promote vegetative recovery, decrease compaction, increase infiltration into the roadbed, increase soil stability, and reduce erosion. Because there is an undetermined amount of road improvements that will cause a short-term increase in vehicular traffic, but road obliteration that result in long-term decrease in vehicular traffic and increased revegetation, there is a moderate risk of noxious weed invasion due to road maintenance, repair and reconstruction.

Increased Vectors Summary
There is only a MODERATE risk of noxious weed invasion, due to the undetermined amount of road maintenance that will result in short-term increase in vehicular traffic, and potential revegetation of obliterated roads with a long-term decrease in vehicular traffic.

7. Noxious Weed Control and Prevention Measures

Recommended standard management requirements (SMRs) and project specific mitigation measures will be implemented as part of this project for noxious weed prevention and control. These SMRs and mitigations are provided below in the Botany Protection Plan (p.30).

Prevention and Control Summary
With or without project implementation there is a MODERATE POTENTIAL for weed spread, although somewhat higher with project implementation and the resulting ground disturbing activities. However, project implementation with standard noxious weed control and prevention measures in place would result in a greatly reduced risk.

8. SUMMARY OF ANTICIPATED WEED RESPONSE TO PROPOSED ACTION

Table 6. Summary of anticipated weed response to the proposed action.

Factors	Variation	Risk
NON-PROPOSED ACTION DEPENDENT FACTORS		
1. Inventory	Adequate	Low Risk
2. Known Noxious Weeds	Numerous small populations of priority noxious weed species	Moderate Risk
3. Habitat Vulnerability	High Cover, moderate disturbance, high elevation	Low Risk
4. Non-project dependent vectors	High road density, moderate recreation	Moderate-to-High Risk
5. Habitat alteration expected as a result of project	Moderate ground disturbance	Moderate Risk
6. Increased vectors as a result of project implementation	Undetermined Road maintenance, road obliteration with revegetation, short-term traffic increase	Moderate risk
7. Prevention measures	Prevention measures implemented	Greatly reduced risk

8. Anticipated weed response to proposed action	No high risk factors, several moderate risk factors	Moderate potential for weed spread as a result of project implementation with mitigation measures applied
9. Cost estimate	None – no weeds being treated as part of the proposed project	Generally, it is more economical and efficient to treat small infestations than to wait until they are too large.

Anticipated Weed Response Summary
Implementation of project design features to prevent introduction of noxious weeds into the project area and prevent their spread is essential to there being an overall MODERATE POTENTIAL for weed spread that would result from project implementation.

9. COST ESTIMATE

Noxious weeds significantly reduce the value of public lands. Noxious weeds negatively impact timber production, grazing, wildlife habitat, and recreational opportunities. Furthermore, noxious weed control is expensive and time consuming. Prevention and control of small infestations can reduce these impacts and reduce expenditures in the long run. Thus, noxious weed surveys, control of small infestations, and prevention measures are vital in reducing overall impacts and costs from noxious weeds.

Since no treatments are planned for the noxious weed species within the Project area as part of planned Project activities, no costs are anticipated beyond those that result from the implementation of standard noxious weed prevention measures.

BOTANY PROTECTION PLAN

MEASURES FOR PROTECTION OF SENSITIVE and WATCH LIST (SPECIAL INTEREST) PLANT SPECIES, and TO PREVENT THE SPREAD OF NOXIOUS WEEDS

Sensitive and Watch List plant species.

The one occurrence of *Scutellaria galericulata* (marsh skullcap), as well as any additional occurrences of the species found within the project area prior or during project implementation, will be protected from all project activities through the establishment of Botanical Controlled Areas, which will be flagged with both blue and black stripe and red and black stripe flagging.

For additional TES Plant species found during the life of this project, an assessment would be done and management prescriptions applied.

Non-Native Invasive Plant species (NNIP – also called noxious weeds).

Recommended Standard Management Requirements (SMRs)
Recommended standard management requirements (SMRs) were developed in accordance with the direction set forth in FSM 2900, as well as the standards and guidelines in Appendix D of the ROD for SNFPA:

Prevention

1. Require all off-road equipment and vehicles (Forest Service and contracted) used for project implementation to be weed-free. Clean all equipment and vehicles of all attached mud, dirt and plant parts at a vehicle washing station or steam cleaning facility before the equipment and vehicles enter the project area. Cleaning is not required for vehicles that would stay on the roadway. In addition, clean all off-road equipment prior to leaving areas infested with noxious weeds.

2. Make every effort to ensure that all materials (i.e. gravel, fill, mulches, etc.) used on the NFS are free of invasive species and/or noxious weeds. Use onsite sand, gravel, rock or organic matter where possible. Encourage use of certified weed free hay and straw. Where states have legislative authority to certify materials as weed-free (or invasive free) and have an active State program to make those State-certified materials available to the public, rules shall be developed that restrict the possession, use, and transport of those materials unless proof exists that they have been State certified.

Control

3. Early Detection and Rapid Response (EDRR): Inventory and survey so as to quickly detect invasive species infestations, and subsequently implement immediate and specific actions to eradicate those infestations before they become established and/or spread. Coordinate detection and response with internal and external partners. EDRR actions are grouped into three main categories: early detection, rapid assessment, and rapid response.

Restoration/Revegetation

4. Pro-actively manage aquatic and terrestrial areas of the NFS to increase the ability of those areas to be self-sustaining and resistant (resilience) to the establishment of invasive species. Where necessary, implement restoration, rehabilitation, and/or revegetation activities following invasive species treatments to prevent or reduce the likelihood of the reoccurrence or spread of invasive species.

5. Where restoration, rehabilitation, or revegetation activities are planned, use weed-free equipment, mulches, and seed sources. Avoid seeding in areas where revegetation will occur naturally, unless noxious weeds are a concern. Save topsoil from disturbance and put it back to use in onsite revegetation, unless contaminated with noxious weeds. All activities that require seeding or planting will need to use

only locally collected native seed sources. Plant and seed material should be collected from as close to the project area as possible, from within the same watershed and at a similar elevation whenever possible. Persistent non-natives such as timothy, orchard- grass, or ryegrass will be avoided. This will implement the USFS Region 5 policy that directs the use of native plant material for revegetation and restoration for maintaining "the overall national goal of conserving the biodiversity, health, productivity, and sustainable use of forest, rangeland, and aquatic ecosystems".

Project Specific Mitigation Measures

All known Canada thistle sites will be flagged with orange and black noxious weed flagging and avoided by all project activities to reduce risk of spread.

If any additional non-native invasive plants are found prior to or during project implementation, these sites will be documented and flagged and avoided by all project activities.

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